

What is claimed is:

1           1. A mechanism for generating forces to transport a  
2 vehicle, comprising:

3           a) at least one torque platform, movably connected  
4 to a vehicle;

5           b) means for moving said torque platform from a  
6 first center of rotation of said vehicle to a second  
7 center of rotation of said vehicle;

8           c) means for rotating said torque platform relative  
9 to said vehicle, about said first center of rotation of  
10 said vehicle, and for rotating said torque platform  
11 relative to said vehicle, about said second center of  
12 rotation of said vehicle; and

13           d) means for coordinating said rotation of said  
14 torque platform about said first center of mass and about  
15 said second center of mass, resulting in a resultant  
16 substantially linear motion of said vehicle in a desired  
17 direction.

1           2. The mechanism in accordance with claim 1, further  
2 comprising two motors and counter-rotating flywheels  
3 operationally connected to said motors, respectively.

1           3. The mechanism in accordance with claim 2, wherein  
2 said means for rotating said torque platform relative to said  
3 vehicle comprises a motor.

1           4. The mechanism in accordance with claim 2, wherein  
2 said means for rotating said torque platform relative to said  
3 vehicle comprises two motors mounted symmetrically at the  
4 periphery of said torque platform.

1           5. The mechanism in accordance with claim 1, further  
2 comprising means for transferring mass from said first center  
3 of rotation of said vehicle to said second center of rotation  
4 of said vehicle.

1           6. The mechanism in accordance with claim 5, wherein  
2 said means for transferring mass comprises two fluid  
3 reservoirs operationally connected by a pump, said reservoirs  
4 filled with a fluid mass sized to result in the change of  
5 center of rotation of said vehicle from said first center of  
6 rotation of said vehicle to said second center of rotation of  
7 said vehicle.

1           7. A mechanism for generating forces to transport a  
2 vehicle, comprising:

3           a) a first torque platform and a second torque  
4 platform, each of said torque platforms operationally  
5 connected to a vehicle, said first torque platform  
6 disposed near the distal end of said vehicle, and said  
7 second torque platform disposed near the proximal end of  
8 said vehicle;

9           c) means for transferring mass from a first center  
10 of rotation of said vehicle, coincident with the center  
11 of rotation of said first torque platform, to a second  
12 center of rotation of said vehicle, coincident with the  
13 center of rotation of said second torque platform, said  
14 first and second centers of rotation being disposed near  
15 the distal and proximal ends of said vehicle,  
16 respectively;

17           d) means for alternately rotating each of said  
18 torque platforms, rotating said first torque platform in  
19 a first rotational direction relative to said vehicle,  
20 about said first center of rotation of said vehicle, and  
21 rotating said second torque platform in a second  
22 rotational direction relative to said vehicle, about said  
23 second center of rotation of said vehicle, said second

24 rotational direction being the opposite rotational  
25 direction to the first rotational direction; and

26 e) means for coordinating said transfer of mass,  
27 rotation in said first rotational direction of said first  
28 torque platform about said first center of mass, and  
29 rotation in said second rotational direction of said  
30 second torque platform about said second center of mass,  
31 resulting in an integrated substantially linear motion of  
32 said vehicle in a desired direction.

1 8. The mechanism in accordance with claim 7, further  
2 comprising two sets of two counter-rotating flywheels  
3 operationally connected to two motors, one of said sets of two  
4 counter-rotating flywheels operationally connected to two  
5 motors disposed on said first torque platform and the second  
6 of said sets of two counter-rotating flywheels operationally  
7 connected to two motors disposed on said second torque  
8 platform.

1 9. The mechanism in accordance with claim 8, wherein  
2 said means for rotating said first torque platform relative to  
3 said vehicle and said second torque platform relative to said  
4 vehicle comprises in each case a motor.

1           10. The mechanism in accordance with claim 8, wherein  
2       said means for rotating said first torque platform relative to  
3       said vehicle and said second torque platform relative to said  
4       vehicle comprises in each case two motors mounted  
5       substantially symmetrically at the periphery of said first and  
6       said second torque platforms.

1           11. The mechanism in accordance with claim 10, wherein  
2       said means for transferring mass from a first center of  
3       rotation of said vehicle to a second center of rotation of  
4       said vehicle comprises a mass transfer system.

1           12. The mechanism in accordance with claim 11, wherein  
2       said mass transfer system comprises two fluid reservoirs  
3       operationally connected by a pump, said reservoirs filled with  
4       a substantial fluid mass sized to result in the change of  
5       center of rotation of said vehicle from said first center of  
6       rotation of said vehicle to said second center of rotation of  
7       said vehicle.